

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

IN THE MATTER OF:

The Dow Chemical Company
Midland, Michigan, 48667,

Respondent.

ADMINISTRATIVE SETTLEMENT
AGREEMENT AND ORDER ON
CONSENT FOR REMOVAL ACTION

Saginaw River Sediment Dioxin
Contamination Site
(adjacent to Wickes Park, City of Saginaw,
Michigan)

Docket No. **V-W- '08-C-886**

Proceeding Under Sections 104, 106(a), 107
and 122 of the Comprehensive
Environmental Response, Compensation,
and Liability Act, as amended, 42 U.S.C. §§
9604, 9606(a), 9607, and 9622

TABLE OF CONTENTS

I.	JURISDICTION AND GENERAL PROVISIONS
II.	PARTIES BOUND
III.	DEFINITIONS
IV.	FINDINGS OF FACT
V.	CONCLUSIONS OF LAW AND DETERMINATIONS
VI.	ORDER
VII.	DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR
VIII.	WORK TO BE PERFORMED
IX.	SITE ACCESS
X.	ACCESS TO INFORMATION
XI.	RECORD RETENTION
XII.	COMPLIANCE WITH OTHER LAWS
XIII.	EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES
XIV.	AUTHORITY OF ON-SCENE COORDINATOR
XV.	PAYMENT OF RESPONSE COSTS
XVI.	DISPUTE RESOLUTION
XVII.	FORCE MAJEURE
XVIII.	STIPULATED PENALTIES
XIX.	COVENANT NOT TO SUE BY U.S. EPA
XX.	RESERVATIONS OF RIGHTS BY U.S. EPA
XXI.	COVENANT NOT TO SUE BY RESPONDENTS
XXII.	OTHER CLAIMS
XXIII.	CONTRIBUTION
XXIV.	INDEMNIFICATION
XXV.	MODIFICATIONS
XXVI.	NOTICE OF COMPLETION OF WORK
XXVII.	FINANCIAL ASSURANCE
XXVIII.	INSURANCE
XXIX.	SEVERABILITY/INTEGRATION/APPENDICES
XXX.	EFFECTIVE DATE

I. JURISDICTION AND GENERAL PROVISIONS

1. This Administrative Settlement Agreement and Order on Consent (“Settlement Agreement”) is entered into voluntarily by the United States Environmental Protection Agency (“U.S. EPA”) and The Dow Chemical Company (“Respondent”). This Settlement Agreement provides for the performance of removal actions by Respondent and the reimbursement of certain response costs incurred by the United States at or in connection with dioxin-contaminated sediments in the Saginaw River located at an area approximately .5 miles downstream of the confluence of the Shiawassee, and Tittabawassee Rivers between river miles 21 and 22 of the Saginaw River, near the center of the Saginaw River, and adjacent to Wickes Park in the City of Saginaw, Michigan, and to a City of Saginaw abandoned boat launch (“the Site”).

2. This Settlement Agreement is issued under the authority vested in the President of the United States by Sections 104, 106(a), 107 and 122 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 U.S.C. §§ 9604, 9606(a), 9607 and 9622, as amended (“CERCLA”). This authority has been delegated to the Administrator of the U.S. EPA by Executive Order No. 12580, January 23, 1987, 52 Federal Register 2923, and further delegated to the Regional Administrators by U.S. EPA Delegation Nos. 14-14-A, 14-14-C and 14-14-D, and to the Director, Superfund Division, Region 5, by Regional Delegation Nos. 14-14-A, 14-14-C and 14-14-D.

3. U.S. EPA has notified the State of Michigan (the “State”) of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

4. U.S. EPA and Respondent recognize that this Settlement Agreement has been negotiated in good faith and that the actions undertaken by Respondent in accordance with this Settlement Agreement do not constitute an admission of any issue of fact, or law, or liability. Respondent does not admit, and retains the right to controvert in any subsequent proceedings other than proceedings to implement or enforce this Settlement Agreement, the validity of the findings of facts, conclusions of law, and determinations in Sections IV and V of this Settlement Agreement. Respondent agrees to comply with and be bound by the terms of this Settlement Agreement and further agrees that it will not contest the jurisdictional basis or the validity of this Settlement Agreement or its terms.

II. PARTIES BOUND

5. This Settlement Agreement applies to and is binding upon U.S. EPA and upon Respondent and its successors and assigns. Any change in ownership or corporate status of Respondent including, but not limited to, any transfer of assets or real or personal property shall not alter Respondent’s responsibilities under this Settlement Agreement.

6. Respondent is required to carry out all activities required by this Settlement Agreement.

7. Respondent shall ensure that its contractors, subcontractors, and representatives comply with this Settlement Agreement. Respondent shall be responsible for any noncompliance with this Settlement Agreement.

III. DEFINITIONS

8. Unless otherwise expressly provided herein, terms used in this Settlement Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations. Whenever terms listed below are used in this Settlement Agreement or in the appendices attached hereto and incorporated hereunder, the following definitions shall apply:

a. “CERCLA” shall mean the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. §§ 9601, *et seq.*

b. “Effective Date” shall be the effective date of this Settlement Agreement as provided in Section XXX.

c. “Dioxin” or “dioxin” shall mean the seventeen chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans identified by the World Health Organization in *The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds*, expressed as toxic equivalence concentrations, as set forth below.

Congener (Full-Name)	Congener (Abbreviation)	CAS No
<u>Dioxins</u>		
2,3,7,8-Tetrachlorodibenzo-p-dioxin	2,3,7,8-TCDD	637719
1,2,3,7,8-Pentachlorodibenzo-p-dioxin	1,2,3,7,8-PCDD	40321-76-4
1,2,3,4,7,8- Hexachlorodibenzo-p-dioxin	1,4-HxCDD	39227-28-6
1,2,3,6,7,8- Hexachlorodibenzo-p-dioxin	1,6-HxCDD	57653-85-7
1,2,3,7,8,9- Hexachlorodibenzo-p-dioxin	1,9-HxCDD	19408-74-3
1,2,3,4,6,7,8- Heptachlorodibenzo-p-dioxin	1,4,8-HpCDD	35822-39-4
1,2,3,4,6,7,8,9-Octachlorodibenzo-p-dioxin	OCDD	3268-87-9
<u>Furans</u>		
2,3,7,8-Tetrachlorodibenzofuran	2,3,7,8-TCDF	40024
1,2,3,7,8-Pentachlorodibenzofuran	1,2,3,7,8-PCDF	57117-41-6
2,3,4,7,8-Pentachlorodibenzofuran	2,3,4,7,8-PCDF	57117-31-4
1,2,3,4,7,8-Hexachlorodibenzofuran	1,4-HxCDF	70648-26-9

1,2,3,6,7,8- Hexachlorodibenzofuran	1,6-HxCDF	57117-44-9
1,2,3,7,8,9- Hexachlorodibenzofuran	1,9-HxCDF	72918-21-9
2,3,4,6,7,8- Hexachlorodibenzofuran	4,6-HxCDF	60851-34-5
1,2,3,4,6,7,8- Heptachlorodibenzofuran	1,4,6-HpCDF	67562-39-4
1,2,3,4,7,8,9- Heptachlorodibenzofuran	1,4,9-HpCDF	55673-89-7
1,2,3,4,6,7,8,9-Octachlorodibenzofuran	OCDF	13550882

Individual dioxins are assessed using a toxic equivalency factor (“TEF”), which is an estimate of the relative toxicity of the compounds to 2,3,7,8-tetrachlorodibenzo-p-dioxin (“TCDD”). These converted concentrations are then added together to determine the “toxic equivalence concentration” (“TEQ”) of the dioxin compounds as a whole.

d. “Future Response Costs” shall mean all costs, including direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Settlement Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Settlement Agreement on or after the Effective Date.

e. “Interest” shall mean interest at the rate specified for interest on investments of the U.S. EPA Hazardous Substance Superfund established by 26 U.S.C. § 9507, compounded annually on October 1 of each year, in accordance with 42 U.S.C. § 9607(a). The applicable rate of interest shall be the rate in effect at the time the interest accrues. The rate of interest is subject to change on October 1 of each year.

f. “License” shall mean the Hazardous Waste Management Facility Operating License issued by the State of Michigan Department of Environmental Quality to The Dow Chemical Company on June 12, 2003.

g. “MDEQ” shall mean the Michigan Department of Environmental Quality and any successor departments or agencies of the State.

h. “National Contingency Plan” or “NCP” shall mean the National Oil and Hazardous Substances Pollution Contingency Plan promulgated pursuant to Section 105 of CERCLA, 42 U.S.C. § 9605, codified at 40 C.F.R. Part 300, and any amendments thereto.

i. “Settlement Agreement” shall mean this Administrative Settlement Agreement and Order on Consent and all appendices attached hereto (listed in Section XXIX). In the event of conflict between this Settlement Agreement and any appendix, this Settlement Agreement shall control.

j. “Parties” shall mean U.S. EPA and Respondent.

k. “Performance Based” means the method for implementing this interim response action removal work, based, not on numerical cleanup criteria, but on locations, volumes, boundaries, or specific actions at the Site, as described in the Work Plan

l. “RCRA” shall mean the Solid Waste Disposal Act, as amended, 42 U.S.C. §§ 6901, *et seq.* (also known as the Resource Conservation and Recovery Act).

k. “Respondent” shall mean The Dow Chemical Company, a Delaware corporation.

m. “Site” shall mean the area of dioxin-contaminated sediments in the Saginaw River located approximately .5 miles downstream of the confluence of the Shiawassee, and Tittabawassee Rivers between river miles 21 and 22 of the Saginaw River, near the center of the Saginaw River, and adjacent to Wickes Park in the City of Saginaw, Michigan, and to a City of Saginaw abandoned boat launch. The Site is depicted generally on the map attached as Attachment A.

n. “State” shall mean the State of Michigan.

o. “U.S. EPA” shall mean the United States Environmental Protection Agency and any of its successor departments or agencies.

p. “Waste Material” shall mean 1) any “hazardous substance” under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); 3) any “solid waste” under Section 1004(27) of RCRA, 42 U.S.C. § 6903(27); and 4) any “hazardous material” under Michigan Administrative Code R 299.9203.

q. “Work” shall mean all activities Respondent is required to perform under this Settlement Agreement, except those activities required by Section XI (Retention of Records).

IV. FINDINGS OF FACT

9. Based on available information, including the Administrative Record in this matter, U.S. EPA hereby finds that:

a. The Site is an area of dioxin-contaminated sediments in the Saginaw River located approximately .5 miles downstream of the confluence of the Shiawassee, and Tittabawassee Rivers between river miles 21 and 22 of the Saginaw River, near the center of the Saginaw River, and adjacent to Wickes Park in the City of Saginaw, Michigan, and to a City of Saginaw abandoned boat launch. The Site is located downstream of The Dow Chemical Company Midland Plant property with a common address of 1000 East Main Street, 1790 Building, Midland Michigan, 48667 (the “Midland Plant”). The Site is the location where Respondent has disposed of hazardous substances, pollutants, or contaminants. The Site is depicted generally on the map attached as Attachment A.

b. The Dow Chemical Company is a Delaware corporation and its registered agent is The Corporation Trust Company with an address of Corporation Trust Center, 1209 Orange Street, Wilmington, Delaware.

c. The Midland Plant began operations in 1897. The Midland Plant covers approximately 1,900 acres. The majority of the Midland Plant is located on the east side of the Tittabawassee River and South of the City of Midland.

d. The Tittabawassee River is a tributary to the Saginaw River, draining 2,600 square miles of land in the Saginaw River watershed. The Tittabawassee River flows south and east for a distance of approximately 80 miles to its confluence with the Shiawassee River approximately 22 miles southeast of Midland. Upstream of the Midland Plant, the Tittabawassee River flow is regulated by the Secord, Smallwood, Edenville, and Sanford dams. The current operation of the hydroelectric station at Sanford results in water releases from Sanford Dam during peak electricity usage periods to provide peaking power to Consumer's Energy. Sanford Lake has limited flood storage capacity due to a narrow range of permitted lake levels. The Dow Dam is located adjacent to the Midland Plant. Below the Dow Dam, the river flow is free flowing to its confluence with the Shiawassee and Saginaw Rivers. Tittabawassee River flow and water level fluctuate daily in response to releases from the Sanford Dam. The average and 100-year flood discharge for the Tittabawassee River based on data from 1937 to 1984 are approximately 1,700 cubic feet per second ("cfs") and 45,000 cfs, respectively. The relatively large ratio between the 100-year flood discharge and the long-term average discharge (26.5) indicates that the river is "flashy," or has a flow regime that is characterized by highly variable flows with a rapid rate of change.

e. The average monthly discharge from 1937 to 2003 for the Tittabawassee River 2,000 feet downstream of the Dow Dam ranged from approximately 600 cfs (in August) to 3,900 cfs (in March), with an average of 1,700 cfs. Discharge is typically highest in March and April during spring snowmelt and runoff. The maximum recorded historical crest of the Tittabawassee River occurred in 1986. A large storm in September 1986 produced up to 14 inches of rain in 12 hours. The discharge of the river near the Dow Dam reached nearly 40,000 cfs, and the river stage was 10 feet above flood stage at its crest (Deedler, Undated). Flows greater than 20,000 cfs have occurred in 22 of the 95 years between 1910 and 2004, with flows greater than 30,000 cfs occurring in 1912, 1916, 1946, 1948, and 1986. In March 2004, the river discharge reached approximately 24,000 cfs.

f. Portions of the Tittabawassee River floodplain are periodically inundated by floodwaters.

g. The Saginaw River is located within the Saginaw Bay and River watershed and drains 6,300 square miles of land. It is formed by the confluence of the Tittabawassee River and the Shiawassee River just south of Saginaw, Michigan. The river itself is relatively short, with only 22.3 miles of length. Most of the Saginaw River flow originates in its major tributaries with 39 percent of flow contributed by the Tittabawassee River, 11 percent of flow contributed by the Shiawassee River, 20 percent of flow contributed by the Flint River, 14 percent of flow contributed by the Cass River and 16 percent of flow contributed by other sources. Most of the rivers in the watershed, including the Cass and Flint Rivers, indirectly discharge into the Saginaw River. The Flint River discharges into the Shiawassee River approximately six miles upstream

of the confluence of the Tittabawassee and Shiawassee Rivers. The Cass River also discharges into the Shiawassee River, approximately five miles downstream of the Flint River and about one mile upstream of the Tittabawassee/Shiawassee/Saginaw confluence.

h. The Saginaw River flows through Saginaw, Michigan and from there to Bay City, where the river discharges into Saginaw Bay. Saginaw Bay water surface elevations and seiche effects (oscillations in water surface elevations caused by meteorological events) can affect Saginaw River water levels and flow rates for its entire length. The Saginaw River discharges into Lake Huron.

i. Sheet piling has been used to stabilize the banks of the Tittabawassee River along numerous stretches within the Midland Plant area and in several downstream locations. This type of bank stabilization increases channel velocity in the immediate area during flood stage by restricting the cross-sectional area of the river and, depending on the local cross-section, may increase downstream flood elevations and erosive forces by increasing the flows and velocities of water that can no longer be stored on the overbank above the stabilized banks.

j. Initially, the Midland Plant operations involved extracting brine from groundwater pumped from production wells ranging in depth from 1,300 to 5,000 feet below groundwater surface. Over the time of its operation, the Midland Plant has produced over 1,000 different organic and inorganic chemicals. These chemicals include the manufacture of 24 chlorophenolic compounds since the 1930s.

k. In the very early history of the Midland Plant, wastes were discharged directly into the Tittabawassee River and, sometime later, wastes were stored and treated in ponds. Other wastes were disposed of at the Midland Plant either on land or by burning. Over time, changes in waste management practices included installation and operation of a modern wastewater treatment plant as well as use of incinerators instead of open burning. Changes in the waste water treatment plant and subsequent incorporation of pollution controls into both the operations of and emissions from the incinerators have reduced or eliminated releases and emissions from the Midland Plant.

l. Air deposition appears to be among the sources of elevated furans and dioxins, and other hazardous substances, found in surface soils in the Midland Plant area. Elevated dioxin and furan levels in and along the Tittabawassee River appear to be primarily attributable to aqueous discharges related to brine electrolysis for chlorine manufacturing, and associated waste management practices for the period at the Midland Plant. Prior to the construction of wastewater storage ponds in the 1920s, waste from manufacturing processes was discharged directly to the Tittabawassee River. Flooding of the Midland Plant property may have resulted in discharges to the Tittabawassee River of stored brines and untreated or partially treated process wastewaters. The primary source of furans and dioxins from the Midland Plant to the Tittabawassee River is believed to be historic releases of aqueous wastes. The chlorine manufacturing process was the likely source of comparatively high furan TEQ readings in and along the Tittabawassee River. Dioxins and furans would have been discharged directly to the Tittabawassee River. Dioxins and furans found in more recent sediments may be related to chlorophenol production that began in the mid-1930s.

m. Pursuant to Section 3006 of the Resource Conservation and Recovery Act (“RCRA”), 42 U.S.C. § 6926, the Administrator of U.S. EPA may authorize a State to administer the RCRA hazardous waste program in lieu of the federal program when the Administrator finds that the State program meets certain conditions. Any violation of regulations promulgated pursuant to Subtitle C (Sections 3001-3023 of RCRA, 42 U.S.C. §§ 6921-6939e) or of any state provision authorized pursuant to Section 3006 of RCRA, constitutes a violation of RCRA, subject to the assessment of civil penalties and issuance of compliance orders as provided in Section 3008 of RCRA, 42 U.S.C. § 6928. Pursuant to Section 3006(b) of RCRA, 42 U.S.C. § 6926(b), the Administrator of U.S. EPA granted the State of Michigan final authorization to administer a state hazardous waste program in lieu of the federal government’s base RCRA program effective October 30, 1986. 51 Fed. Reg. 36804 (October 16, 1986). The U.S. EPA granted Michigan final authorization to administer certain HSWA and additional RCRA requirements effective January 23, 1990, 54 Fed. Reg. 48608 (November 24, 1989); June 24, 1991, 56 Fed. Reg. 18517 (April 23, 1991); November 30, 1993, 58 Fed. Reg. 51244 (October 1, 1993); April 8, 1996, 61 Fed. Reg. 4742 (February 8, 1996); December 28, 1998, 63 FR 57912 (October 29, 1998) (stayed and corrected effective June 1, 1999, 64 Fed. Reg. 10111 (March 2, 1999)); and, July 31, 2002, 67 FR 49617 (July 31, 2002). The U.S. EPA authorized Michigan regulations are codified at Michigan Part 111 Administrative Rules 299.9101 *et seq.* See also 40 C.F.R. § 272.1151 *et seq.*

n. The MDEQ issued to Respondent its current RCRA Hazardous Waste Management Facility Operating license for the Midland Plant, with an effective date of June 12, 2003, and an expiration date of June 12, 2013. Under its License, Respondent has been conducting corrective action work. As part of the RCRA corrective action work, Respondent prepared and submitted on December 29, 2005, a Remedial Investigation (“RI”) Work Plan (“RIWP”) for the area consisting of river channels and floodplains of the Tittabawassee River. On March 2, 2006, the MDEQ notified Respondent that the RCRA RIWP was substantively deficient and Dow was required to submit a completely revised RIWP. On July 7, 2006, Respondent submitted a GeoMorph Sampling and Analysis Plan for the Upper Tittabawassee River (“UTR SAP”). On July 12, 2006, the MDEQ approved on a pilot basis, the UTR SAP for the upper 6.5 miles of the Tittabawassee River. On December 1, 2006, Respondent submitted a revised RIWP to the MDEQ for review. On February 1, 2007, Respondent submitted the UTR Pilot Site Characterization Report. On May 3, 2007, the MDEQ approved the UTR Pilot Site Characterization Report with conditions and removed pilot site status from the GeoMorph process. On September 17, 2007, Respondent submitted a revised RIWP to MDEQ for the Tittabawassee River and on October 1, 2007, Respondent submitted a revised RIWP for the City of Midland.

o. Sampling has been conducted under the pilot GeoMorph UTR SAP as part of the RCRA Remedial Investigation process under the License. The sampling is being conducted

to identify areas contaminated with dioxins and furans, and other potential contaminants of interest.

p. The pilot GeoMorph sampling plan included sampling conducted in 2006 in and along the Tittabawassee River. Sampling within Reach D establishes dioxin sediment contamination levels of up to 69,000 parts per trillion (“ppt”) dioxin, and other contaminants, including chlorobenzene at levels of up to 950 parts per million (“ppm”). Sampling within Reach J-K establishes dioxin sediment contamination levels of up to 84,000 ppt dioxin. Sampling within Reach O establishes dioxin sediment contamination levels of up to 87,000 ppt dioxin. Sampling conducted in 2007 within Reach L establishes dioxin sediment contamination levels of up to 110,000 ppt dioxin.

q. Contaminants found in July 1994 in the Midland Plant revetment groundwater interception system sumps were: chlorobenzene; tetrachlorobenzene; trichloroethene; xylene; 1,2-dichlorobenzene; 1,3-dichlorobenzene; 1,4-dichlorobenzene; 2,4-dichlorophenol; 2,6-dichlorophenol; hexachlorobutadiene; 2,3,4,6-tetrachlorophenol; 1,2,4-trichlorobenzene; 2,4,5-trichlorophenol; 2,4,6-trichlorophenol; 2-chlorophenol; 3-methylphenol (meta cresol); 4-methylphenol (para cresol); 2,4-dichlorophenoxyacetic acid; phenol; pentachlorophenol; TCDF; PCDF isomers; and HCDF isomers. These contaminants may be found within the Site. Based on the Midland Plant’s historic operations, other contaminants that may be present at the Site include volatile organic compounds, semi-volatile organic compounds, polychlorinated biphenyls, metals, and pesticides. The groundwater system continues to be monitored for contaminants including those listed herein.

r. Sampling conducted as part of the RCRA RIWP under the License indicates that the dioxin/furan contamination in the Tittabawassee River adjacent to and downstream of Dow is associated with the Midland Plant. Soil samples collected upstream of the City of Midland did not contain elevated levels of dioxins or furans. Dioxin and furan concentrations from these sample locations are consistent with statewide background concentrations. Sampling within tributaries to the Tittabawassee River has not identified any significant sources of dioxins or furans. No significant sources of dioxins or furans are known within the City of Midland other than Dow. Dioxin/furan congener profile charts for Tittabawassee River sediments and floodplain soils downstream of the Midland Plant are similar amongst themselves and very different from sample locations upstream of the Midland Plant. Dioxin and furan contamination within the estimated 100-year flood plain downstream of the Midland Plant has been documented.

s. U.S. EPA’s understanding of potential hazardous substances in soils in and along the upper six miles of the Tittabawassee River is based largely on studies conducted by Dow in 1984 (Agin et al., 1984) and 1998 (Dow, 2000), U.S. EPA in 1983-1984 (U.S. EPA, 1985), and MDEQ in 1996 (MDEQ, 1997). Although these studies focused primarily on dioxins and furans, the 1985 U.S. EPA study also analyzed samples for volatile organic compounds (“VOCs”), semivolatile organic compounds (“SVOCs”), and polychlorinated biphenyls (“PCBs”). More recent but limited sampling results have been provided by Dow, the University

of Michigan Dioxin Exposure Study (“UMDES”), and onsite soil sampling conducted by MDEQ at the Midland Plant in 2005 and 2006. A study conducted by U.S. EPA in 1987 provided limited data on concentrations of dioxins and furans in garden vegetables grown in the City of Midland.

t. The studies conducted prior to 1996 by Dow, U.S. EPA, and MDEQ focused on sampling and analysis for 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD) as the main dioxin congener. More recent studies report dioxin and furan data TEQ concentrations. Dioxin and furan sample results from the laboratory are currently typically reported on an individual congener basis. TEQ concentrations are calculated according to a toxicity weighting scale. TEQ concentrations are typically reported in concentrations of parts per trillion.

u. The following sampling events and studies are among those conducted at, and around, the Site:

- i. 1978 Dow Chemical Study - Dow reported results of a chlorinated dioxin and dibenzofuran monitoring program to the Michigan Department of Natural Resources and U.S. EPA Office of Toxic Substances. (Blumb, R.R. et al, “Trace Chemistries of Fire: A Source of Chlorinated Dioxins,” Science, 210, 385, 1980). Native fish and caged fish tested downstream of the Dow Chemical facility and into Saginaw Bay were found to contain dioxin (TCDD) up to 244 ppt. Data provided by Dow to U.S. EPA revealed dioxin and furan contamination in various waste streams, including from the rotary kiln incinerator, as well as on-site soils and dusts, led U.S. EPA to conclude that widespread dioxin contamination existed. As a result of these findings, U.S. EPA formed a preliminary conclusion of substantial risk of injury to human health or the environment existed under section 8(e) of the Toxic Substances Control Act and concluded that Dow Chemical was likely the sole source of the dioxin contamination. (August 8, 1978, communication to J. Merenda, Director, Assessment Division, OTE/OTS, “Interim Status Report 8EHQ-0778-0209,” from F. Kover, OTE/OTS; September 6, 1978, communication to Ethyl H. Blair, Dow Chemical, “EPA Document Control Number 8EHQ-0778-0209,” from Warren R. Muir, OTS, EPA; February 8, 1979, communication to J. Merenda, Director, Assessment Division, OTRE/OTS, “Status Report Supplement 8EHQ-0778-0209”, from F. Kover, OTE/OTS; A Review of Polychlorinated dibenzo-p-dioxin and Polychlorinated dibenzofurans: Sources and Effects, U.S. EPA, 1981).
- ii. 1984 Dow study - the primary objective of the 1984 Dow study was to identify point sources of dioxins and furans at the Midland Plant (Agin et al., 1984). As part of the study, 11 samples also were collected within the offsite Study Area. At the time this study was published, the Public Health Service Center for Disease Control had indicated that 2,3,7,8-

TCDD concentrations below the concern level of 1,000 ppt were sufficiently low that there was “no medical reason to warrant concern or suggest remedial action” (Agin et al., 1984). Concentrations of 2,3,7,8-TCDD in the offsite samples ranged from 0.6 to 450 ppt. The study concluded that the levels of 2,3,7,8-TCDD were “significantly below the 1 ppb concern level established by the [Centers for Disease Control and Prevention] for residential areas” (Agin et al., 1984).

- iii. 1985 U.S. EPA Study - The primary objective of the 1985 U.S. EPA Study was to determine whether concentrations of dioxins and other hazardous substances present on- and off-site of Dow’s Midland Plant might pose unacceptable public health risks (U.S. EPA, 1985). Approximately 80 soil samples were collected on-site and off-site and primarily analyzed for 2,3,7,8-TCDD. Concentrations of 2,3,7,8-TCDD in on-site samples ranged from 18 to 25,000 ppt. Eight samples were evaluated for dioxins and furans, including six from schools and city parks. The average dioxin level found was 53 ppt TEQ with a high of 78 ppt 2,3,7,8-TCDD. Soils from residential areas downwind of the facility were evaluated for 2,3,7,8-TCDD and levels ranged from non-detectable to 270 ppt (at a roof drip line or down spout area). The residential properties were found to have an estimated average level of 34 ppt TEQ based upon ratios of 2,3,7,8-TCDD to dioxins and furans found in other locations. Thirteen samples were also analyzed for VOCs, SVOCs, pesticides and PCBs. Several polynuclear aromatic hydrocarbons (PAHs), chlordane and PCB-1254 were detected in this sample group. (“Dioxin Risk Assessment for Dioxin Contamination Midland Michigan”, EPA-905/4-88-005, April, 1988).
- iv. 1986 U.S. EPA Study - Wastewater characterization studies, fish and sediment studies further confirmed dioxin releases from the Midland Plant and led to the implementation of control measures to reduce dioxin discharges, including installation of more advanced wastewater treatment, and adoption of a 2,3,7,8-TCDD effluent criteria of 10 parts per quadrillion (July 6, 1986, Dow Chemical Wastewater Characterization Study; Tittabawasee River Sediments and Native Fish, EPA-9005/4-88-003).
- v. 1987 U.S. EPA Study - U.S. EPA evaluated of the incinerator data submitted by Dow as well as U.S. EPA’s independent investigations of incinerator exhaust and ambient air. Historic waste burning and waste incineration were found to be the primary source of elevated furans and dioxins found in surface soils and dusts in the City of Midland area. Based upon evaluations of stack emissions, U.S. EPA concluded that the incinerator was no longer a significant source of dioxins and furans to the

community. (Michigan Dioxin Studies, "Dow Chemical Building 703 Incinerator Exhaust and Ambient Air Study;" EPA-905/4-88-04).

- vi. 1987 U.S. EPA garden vegetable study - In 1987, U.S. EPA Region 5 conducted preliminary screening of home-grown vegetables from two gardens in the City of Midland, and a control garden in Eagle, Michigan (U.S. EPA, 1988). Fresh or frozen vegetables (carrots, beets, onions, and lettuce) and garden soil samples were collected and analyzed for dioxins and furans. Although dioxins and furans were present in the soils of both gardens, they were not detected in any vegetable tissue samples (U.S. EPA, 1988).
- vii. 1988 US. EPA Study and Risk Management Conclusions. A comprehensive human health risk analysis was completed by U.S. EPA on sample results obtained from air, water, fish, and soils ("Dioxin Risk Assessment for Dioxin Contamination Midland Michigan", EPA-905/4-88-005, April, 1988; Risk Management Recommendations for Dioxin Contamination at Midland Michigan: Final Report; EPA-905/4-88-008). Although residential data was limited and did not include properties along the river, exposure to dioxins in residential soils was found not to present significant risks, except to children with pica. The following recommendations were made to reduce exposure to dioxins: "Children at play, particularly toddlers and children with pica should be encouraged to keep soil or dirt out of their mouths. Children and adults should wash their hands after exposure to outdoor soils, particularly before meals. Home-grown vegetables, both leafy vegetables and root crops should be thoroughly washed prior to consumption to remove soil particles. Peeling of root crops might be helpful in removing 2,3,7,8-TCDD which may be in soil on the skins or absorbed into the skins. Household interiors should be regularly cleaned to minimize contaminated dusts which can be inhaled or ingested."
- viii. 1988 U.S. EPA Risk Management Report. U.S. EPA concluded that Tittabawassee River sediments and the river flood plain, from upstream of the Midland Plant to downstream of the facility should be evaluated to determine the potential for dioxin and other chemical contamination. Based upon these findings it was recommended that a determination be made regarding whether sediment removal might be appropriate (Risk Management Recommendations for Dioxin Contamination at Midland Michigan: Final Report; EPA-905/4-88-008).
- ix. 1996 MDEQ study - The objective of the 1996 MDEQ study was to evaluate the distribution of dioxin and furan concentrations in the Midland community and the Midland Plant and to compare these results to those of the 1984 Dow and 1985 U.S. EPA studies (MDEQ, 1997). The study

reported results for 17 individual dioxin and furan congeners, as well as calculated TEQs using pre-1998 TEFs. Approximately 35 samples were collected in the offsite Study Area. 2,3,7,8-TCDD concentrations in the sample group ranged from 3 to 288 ppt, and TEQ concentrations ranged from 9 to 602 ppt.

- x. 1998 Dow study - Approximately 45 soil samples were collected in the offsite Study Area during the 1998 Dow study (Dow, 2000). Most samples were collected from Dow property (Corporate Center area). The objective of this study was to determine descriptive statistics (mean, median, geometric mean, standard deviation, variance, and normality check) for sample groups from the Dow Corporate Center and Saginaw/Salzburg/Rockwell Roads site. Concentrations of TEQs (based on pre-1998 TEFs) in the data set ranged from 14 to 513 ppt (Dow, 2000).
- xi. 2002 Great Lakes Protection Fund Study conducted by MDEQ - Baseline Chemical Characterization of Saginaw Bay Watershed Sediments - The focus of the study was to characterize the sediments in the Tittabawassee River study area beginning upstream of Midland Michigan on the Pine, Chippewa, and Tittabawassee Rivers, and continuing downstream on the Tittabawassee to its confluence with the Saginaw River. The analytical data from this project was intended to serve as a screening level evaluation of sediment quality in the Tittabawassee River; to determine if contaminants are present at levels of environmental concern; and to determine if Tittabawassee River sediments are a potential source of ongoing releases to Lake Huron. Finally, analytical results from the study can be used to form the basis for a request for corrective action, if necessary, from regulated facilities within the watershed. The study included the collection of approximately 67 sediment samples and 10 flood plain soil samples, found highly elevated levels of dioxins and furans in sediments and flood plain soils and concluded that the geographic distribution of the contaminants combined with the dioxin and furan congener profile information strongly suggests that Dow's Midland facility is the most likely source of the elevated levels of dioxins and furans in the Tittabawassee River. The MDEQ study further concluded the following with regard to dioxins and furans:
 - 1. The concentrations of dioxins and furans in sediments and soils represent a potential environmental and human health issue in the Tittabawassee River watershed that requires further study.
 - 2. In the study area, the bulk of the dioxin-like toxicity in sediments and soils is contributed by the polychlorinated dibenzo-p-dioxins and furans. In particular, 2,3,7,8-TCDF and 2,3,4,7,8-PeCDF contribute the bulk of the dioxin-like toxicity to the samples

collected from below the confluence of the Tittabawassee and Chippewa Rivers. Little dioxin-like toxicity appears to be contributed by other compounds that exhibit dioxin-like activity, such as PCBs.

3. The downstream extent of dioxin and furan contamination in sediments and flood plain soils has not been completely defined.
 4. Deeper sediment cores are needed to determine the vertical extent of sediment contamination in the Tittabawassee and downstream in the Saginaw River.
 5. The distribution of dioxins and furans in the study area sediments appears heterogeneous. This is most likely related to the flow regime of the Tittabawassee River. The relationship of grain size to dioxin and furan concentrations in the study area needs to be investigated.
 6. The H4IIE-luc bioassay technique can be successfully used as a tool to direct further investigation of dioxin and furan contamination in the study area.
 7. The most probable historic source of dioxins and furans in the Tittabawassee River watershed, based on the geographic distribution of the contaminants and the chemical profiles of the dioxin and furan congeners, is located in Midland, Michigan.
- xii. 2005 - Michigan Department of Community Health Study - A Pilot Exposure Investigation: Dioxin Exposure in Adults Living in the Tittabawassee River Flood Plain Saginaw County, Michigan (PEI) - The PEI report found that dioxin levels in blood samples for some Tittabawassee River Flood Plain study participants were higher on average than average estimates for people of the same age with no known exposure to dioxins beyond background. While some of the total dioxin toxic equivalent (TEQ) levels in the participants' blood samples were on the high end of the range, all fell between the lowest and highest levels for people with no known exposure to dioxins beyond background. These findings are consistent with those reported for the University of Michigan Dioxin Exposure Study, completed in 2006. The MDCH Division of Environmental and Occupational Epidemiology conducted this Investigation under a cooperative agreement with the federal ATSDR.
- xiii. 2006 Great Lakes National Program Office Grant Project # GL965334010 conducted by MDEQ - Dioxin-Like Toxicity in the Saginaw Bay

Watershed - Flood plain soils (115) and sediment samples (97) were collected from the Saginaw Bay Watershed. Samples were collected from a geographically extensive area that includes the Shiawassee River, the Saginaw River, and Saginaw Bay. These samples were analyzed for a number of constituents, including dioxins and furans, coplanar polychlorinated biphenyls (PCBs), and polybrominated diphenyl ethers (PBDEs). Dioxin-like toxicity, expressed as total toxic equivalence (TEQ), in parts per trillion (ppt) is present at higher concentrations in the flood plain soils and sediments of the Saginaw River and Saginaw Bay than in flood plain soils and sediments from the Shiawassee River, one of two major upstream tributaries to the Saginaw River. MDEQ concluded that most of the dioxin-like toxicity from samples collected in and along the Saginaw River and Saginaw Bay is contributed by furans. Congener profiles constructed from the 17 dioxins and furans that exhibit dioxin-like toxicity are similar to samples that have been previously collected from the Tittabawassee River, the other upstream tributary to the Saginaw River. The geographic distribution of contamination, along with the similarity of the congener profiles, indicate that the Tittabawassee River is the source of the majority of the dioxin and furan contamination found in the sediments and soils of the Saginaw River and Saginaw Bay.

xiv. 2006 University of Michigan Dioxin Exposure Study (UMDES) –

1. The objective of the UMDES was to evaluate human exposure to the dioxins, furans and dioxin-like PCBs in the City of Midland and along the Tittabawassee River (University of Michigan, 2006). The sample locations remain confidential as part of the study design, however, summary statistics are available, as well as highest and lowest values. Mean and median TEQ concentrations (based on 1998 TEFs and data for 29 dioxin, furan and PCB congeners) were reported. These TEQ results cannot be directly compared to results from other previous investigations because they include PCB congeners.
2. Floodplain – Fourteen percent of the properties tested in the floodplain had a soil sample with TEQ concentrations exceeding 1,000 ppt. With a sample size of 203 properties, this equates to about 28 properties with a soil sample with TEQ concentrations exceeding 1,000 ppt.
3. Other Midland/Saginaw – The UMDES study included properties that were in areas of Midland and Saginaw that were not in or near

the floodplain, nor in the “Midland Plume.” A sample at one property in this sample group had TEQ concentrations of 15,300 ppt. This high level was attributed to moving contaminated Tittabawassee River floodplain soil to an area outside the floodplain.

4. The study concluded that people who eat fish from, or conduct recreational activities in, the Tittabawassee River, Saginaw River and Saginaw Bay have higher TEQ levels in their blood than people who do not engage in those activities.
- xv. 2005 MDEQ samples - MDEQ collected surface soil samples from eight locations within the Midland Plant in 2005. Samples were analyzed for dioxins and furans, PCBs, pesticides, VOCs, SVOCs, and metals. TEQ concentrations in the surface soil samples (based on 1998 TEFs) ranged from 2.3 to 1,800 ppt. Other chemicals were detected as well.
- xvi. 2006 MDEQ samples - MDEQ collected additional surface soil samples from within the Midland Plant in 2006. These samples were also analyzed for dioxins and furans, PCBs, pesticides, VOCs, SVOCs, and metals. TEQ concentrations reported by Dow for 15 samples ranged from 8.5 to 53,000 ppt.

The soil sample data from certain of these previous investigations were reviewed by Dow as part of its RCRA RIWP under the License to determine the degree to which the data could be used in remedial investigation data evaluation activities.

v. In October 2003, MDEQ completed its “Tittabawassee River Aquatic Ecological Risk Assessment,” and Dow responded to that document on December 19, 2003. In April 2004, MDEQ completed its “Tittabawassee River Floodplain Screening-level Ecological Risk Assessment.” On July 30, 2004, U.S. EPA issued its “(1) Health Risk Analysis of Tittabawassee Fish with Dioxin and (2) Recommendations for Risk Evaluation.”

w. In the MDEQ 2003 “Tittabawassee River Aquatic Ecological Risk Assessment,” risks to birds and mammals from consuming fish from the Tittabawassee River below the City of Midland were evaluated using a streamlined approach that included site-specific contaminant data and modeling related to TCDD (fish tissue and bird egg concentrations) and data from the scientific literature.

x. The main conclusion of the MDEQ 2003 “Tittabawassee River Aquatic Ecological Risk Assessment” is that the possibility of unacceptable risks to aquatic receptors, as well as avian and mammalian piscivores in the Tittabawassee River floodplain, due to sediment contamination by dioxin cannot reasonably be discounted.

y. In the MDEQ 2004 “Tittabawassee River Floodplain Screening-level Ecological Risk Assessment” risks to six species of birds and mammals from consuming soils and invertebrate, mammalian, and avian prey from the floodplain of the Tittabawassee River downriver of the City of Midland were evaluated using a screening level ecological risk assessment. This analysis was based on empirical soil PCDD/PCDF concentrations and bioaccumulation, toxicological, and ecological data from the scientific literature. The question addressed by this ecological risk assessment was whether an unacceptable risk to ecological receptors in the Tittabawassee River floodplain could be reasonably discounted.

z. The main conclusion of the MDEQ 2004 “Tittabawassee River Floodplain Screening-level Ecological Risk Assessment” is that the possibility of unacceptable risks to terrestrial receptors in the Tittabawassee River floodplain due to soil contamination by dioxin cannot reasonably be discounted. The high hazard index (“HI”) values obtained may be an indication that risk exists in the assessment area. Further site-specific studies are needed before any such risks can be confirmed or rejected.

aa. In the U.S. EPA 2004 “(1) Health Risk Analysis of Tittabawassee Fish with Dioxin and (2) Recommendations for Risk Evaluation,” U.S. EPA conducted an initial evaluation of the risks to humans from consuming fish from the Tittabawassee River. Tittabawassee River Fish data, collected by DEQ in 2003 and made available to U.S. EPA in June 2004, was analyzed to assess risks to fish consumers. The conclusion was that dioxins in certain river fish present unacceptable cancer and non-cancer risks to humans under certain exposure scenarios. Furthermore, dioxin levels are elevated in area turkey, deer and other game (Dow Chemical, July 2004) indicating terrestrial food chain contamination due to contamination of flood plain soils, posing potential public health risks.

bb. Human access to the Site is unrestricted to people approaching the Site from the Saginaw River. Wildlife in the area also has unrestricted access. The Site also may be subject to flooding, erosion, and other mechanisms that result in sediment re-location. This is particularly true during high stream flow events. This may result in the spread of dioxin contamination to other downstream locations, as well as to other locations within the flood plain. This may also result in further contamination of fish and invertebrates within the river and at downstream locations.

cc. On July 12, 2007, U.S. EPA and Dow entered into three separate Administrative Settlement Agreements and Orders on Consent under the authority of Sections 104, 106(a), 107, and 122 of CERCLA. The Administrative Settlement Agreements and Orders provide for CERCLA time critical removal actions to remove certain dioxin-contaminated bottom deposits, sediments, and/or soils in, or along, the Tittabawassee River in Midland County, Michigan. Each of these three performance based removal actions began no later than August 15, 2007, and must be completed by December 15, 2007.

i. The first Administrative Settlement Agreement and Order on Consent (“AOC”), entered in U.S. EPA Docket No. V-W-07-C-874, provides for

the performance of removal actions by Dow to cleanup dioxin-contaminated bottom deposits and sediments at the area known as Reach D, which is located at and in the vicinity of an historic flume situated along the northeast bank of the Tittabawassee River, within the Midland Plant property in Midland County, Michigan.

- ii. Under the second AOC, entered in U.S. EPA Docket No. V-W-07-C-875, Dow agreed to perform a removal action at an area known as Reach J-K, which is located in overbank areas on the northeast side of the Tittabawassee River, approximately 3.6 miles downstream of the confluence of the Chippewa and Tittabawassee Rivers. Under this AOC, Dow removed a dioxin-contaminated naturally occurring levee, capped one dioxin-contaminated upland area and fenced off another dioxin-contaminated wetland area. Reach J-K is located within Dow's property bounded to the northeast by a wetland with Saginaw Road to the northeast beyond the wetland, the Caldwell boat launch to the South, and to the west by the east channel bank of the Tittabawassee River, in Midland County, Michigan.
- iii. Under the third AOC, entered in U.S. EPA Docket No. V-W-07-C-876, Dow agreed to perform a removal action at an area known as Reach O of the Tittabawassee River, an approximately 1,300 foot-long point bar extending approximately 50 to 100 feet into the Tittabawassee River and situated parallel to the northeast bank of the Tittabawassee River, approximately 6.1 miles downstream of the confluence of the Chippewa and Tittabawassee Rivers and located within, or immediately adjacent to, Dow property located to the south of North Saginaw Road in Midland County, Michigan. Under this AOC, Dow removed dioxin-contaminated sediments in designated locations of the point bar.

dd. On November 9, 2007, The Dow Chemical Company ("Dow") notified EPA that Dow had sampled sediments approximately .5 miles downstream of the confluence of the Shiawassee, and Tittabawassee Rivers between river miles 21 and 22 of the Saginaw River, near the center of the Saginaw River, and adjacent to Wickes Park in the City of Saginaw, MI, and to a City of Saginaw abandoned boat launch. During this sampling, Dow took a sediment sample at the Site with a preliminary result of 1,640,567 ppt TEQ for dioxin. The sampling at the Site is taking place pursuant to *The Saginaw River / Bay Investigation Work Plan - Fall 2007 Field Work for the Saginaw River and Saginaw Bay, Michigan*, dated September 14, 2007. This work plan has not been approved by the Michigan Department of Environmental Quality or U.S. EPA. Dow is proceeding with implementing the work plan on an unapproved basis.

ee. Dioxins, furans, and chlorobenzenes are listed as hazardous constituents in the Resource Conservation and Recovery Act (RCRA) Appendix VIII to 40 CFR 261; and Part 111 ,

Hazardous Waste Management, of Michigan's NREPA, 1994 PA 451, as amended, Michigan Compiled Laws ("MCL") 324.101 et seq.

ff. U.S. EPA OSWER Directive 9200.4-26, April 13, 1998, has generally selected 1 ppb as a cleanup level for dioxin for direct contact threat in residential soils at Superfund and RCRA cleanup sites. Michigan DEQ has established a more restrictive state ARAR of .09 ppb. The MDEQ ARAR is established in Part 201, Environmental Remediation, of the NREPA, 1994 PA 451, as amended and Part 213, Leaking Underground Storage Tanks, of the NREPA.

gg. Dioxins and furans are listed as hazardous constituents in the Resource Conservation and Recovery Act (RCRA) Appendix VIII to 40 CFR 261; and Part 111, Hazardous Waste Management, of Michigan's Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Michigan Compiled Laws ("MCL") 324.101 et seq. ("NREPA").

V. CONCLUSIONS OF LAW AND DETERMINATIONS

10. Based on the Findings of Fact set forth above, and the Administrative Record supporting this removal action, U.S. EPA has determined that:

- a. The Site is a "facility" as defined by Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).
- b. The contamination found at the Site, as identified in the Findings of Fact above, includes a "hazardous substance" as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14).
- c. Respondent is a "person" as defined by Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).
- d. Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a), and is liable for performance of response action and for response costs incurred and to be incurred at the Site.
 - i. Respondent is the "owner" and/or "operator" of a facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(1) of CERCLA, 42 U.S.C. § 9607(a)(1).
 - ii. Respondent is the "owner" and/or "operator" of a facility at the time of disposal of hazardous substances at the facility, as defined by Section 101(20) of CERCLA, 42 U.S.C. § 9601(20), and within the meaning of Section 107(a)(2) of CERCLA, 42 U.S.C. § 9607(a)(2).

e. The conditions described in the Findings of Fact above constitute an actual or threatened “release” of a hazardous substance from the facility into the “environment” as defined by Sections 101(22) and 101(8) of CERCLA, 42 U.S.C. §§ 9601(22) and 9601(8).

f. The conditions present at the Site constitute a threat to public health, welfare, or the environment based upon the factors set forth in Section 300.415(b)(2) of the National Oil and Hazardous Substances Pollution Contingency Plan, as amended ("NCP"), 40 CFR §300.415(b)(2). These factors include, but are not limited to, the following:

- i. The Site is an area of uncontained, dioxin-contaminated sediment located in the Saginaw River. The sediments are in the Saginaw River and access to the Site is unrestricted. Aquatic life and other wildlife in the area also have unrestricted access. The Site may also be subject to flooding and erosion. This is particularly true during high stream flow events. This may result in the spread of dioxin contamination to downstream locations, as well as within the flood plain. This may also result in further contamination of fish and invertebrates within the river.
- ii. High levels of hazardous substances or pollutants or contaminants in bottom deposits and sediments largely at or near the surface, that may migrate; this factor is present at the Site due to the existence of dioxin-contaminated bottom deposits and sediments at or near the surface, as well as at depth exist at the Site. The Site is subject to periodic flooding and erosion. This may result in the spread of dioxin contamination to other downstream locations, as well as within the flood plain.
- iii. Actual or potential contamination of sensitive ecosystems; this factor is present at the Site due to the existence of dioxin-contaminated bottom deposits and sediments at or near the surface, as well as at depth exist at the Site. The Site is subject to periodic flooding and erosion. This may result in the spread of dioxin contamination to downstream locations and the contamination of the water in the the Saginaw River, and ultimately Lake Huron.
- iv. The Site is located within one-half mile below the confluence of the Tittabawassee and Shiawassee Rivers. The Tittabawassee River is often subjected to extreme weather conditions in the winter and spring, which enhance the threat of a release of dioxins and furans. The breakup of ice in the late winter, and the movement of ice floes downstream, causes scouring of the banks and river bottom. Likewise, heavy spring rains and/or summer storms increase stream volume and current velocity, which lead to increased scouring of the river bottom and banks. All of these

forces cause an increase in the volume and extent of dioxin and furan contamination in the Tittabawassee River and the Saginaw River.

g. The removal action required by this Settlement Agreement is necessary to protect the public health, welfare, or the environment and, if carried out in compliance with the terms of this Settlement Agreement, will be considered consistent with the NCP, as provided in Section 300.700(c)(3)(ii) of the NCP.

VI. SETTLEMENT AGREEMENT AND ORDER

11. Based upon the foregoing Findings of Fact, Conclusions of Law, Determinations, and the Administrative Record for this Site, it is hereby Ordered and Agreed that Respondent shall comply with all provisions of this Settlement Agreement, including, but not limited to, all attachments to this Settlement Agreement and all documents incorporated by reference into this Settlement Agreement.

VII. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR, AND ON-SCENE COORDINATOR

12. Respondent shall retain one or more contractors to perform the Work and shall notify U.S. EPA of the name(s) and qualifications of such contractor(s) within 5 business days of the Effective Date. Respondent shall also notify U.S. EPA of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least 5 business days prior to commencement of such Work. U.S. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Respondent. If U.S. EPA disapproves of a selected contractor, Respondent shall retain a different contractor and shall notify U.S. EPA of that contractor's name and qualifications within 3 business days of U.S. EPA's disapproval. The contractor must demonstrate compliance with ANSI/ASQC E-4-1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), by submitting a copy of the proposed contractor's Quality Management Plan ("QMP"). The QMP should be prepared consistent with "EPA Requirements for Quality Management Plans (QA/R-2)" (EPA/240/B0-1/002), or equivalent documentation as required by U.S. EPA.

13. Respondent has designated, and U.S. EPA has approved, Todd Konechne as the Project Coordinator who shall be responsible for administration of all actions by Respondent required by this Settlement Agreement. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available during Site work. U.S. EPA retains the right to disapprove of the designated Project Coordinator. If U.S. EPA disapproves of the designated Project Coordinator, Respondent shall retain a different Project Coordinator and shall notify U.S. EPA of that person's name, address, telephone number, and qualifications within 4 business days following U.S. EPA's disapproval. Receipt by Respondent's Project Coordinator of any notice or communication from U.S. EPA relating to this Settlement Agreement shall constitute receipt by Respondent.

14. U.S. EPA has designated James Augustyn of the Emergency Response Branch, Region 5, as its On-Scene Coordinator (“OSC”). Except as otherwise provided in this Settlement Agreement, Respondents shall direct all submissions required by this Settlement Agreement to the OSC at: James Augustyn, On Scene Coordinator, U.S. EPA, 25089 Center Ridge Road, Westlake, OH 44145. Respondent is encouraged to make its submissions to U.S. EPA on recycled paper (which includes significant post consumer waste paper content where possible) and using two-sided copies.

15. U.S. EPA and Respondent shall have the right, subject to Paragraph 13, to change their respective designated OSC or Project Coordinator. U.S. EPA shall notify the Respondent, and Respondent shall notify U.S. EPA, as early as possible before such a change is made, but in no case less than 24 hours before such a change. The initial notification may be made orally but it shall be promptly followed by a written notice.

VIII. WORK TO BE PERFORMED

16. Respondent shall perform, at a minimum, all actions necessary to implement the approved Removal Work Plan. The actions to be implemented generally include, but are not limited to, the following:

a. Develop for review and approval by U.S. EPA a Performance Based Removal Work Plan describing in detail the removal activities to be taken at the Site. Upon approval, implement the Removal Work Plan. The Removal Work Plan shall include a comprehensive description of the project tasks, procedures to accomplish them, quality assurance/quality control systems, project documentation and project schedule. The removal activities described in the Removal Work Plan shall be performed in accordance with the criteria in Paragraphs 16.b. through 16.l. A site specific Health and Safety Plan shall be prepared pursuant to Paragraph 18;

b. The Removal Work Plan shall include, for review and approval by U.S. EPA, the removal action and supporting field activities including a Field Sampling Plan describing the sampling and data collection methods for pre-removal characterization, post-removal performance monitoring, and post-removal sediment baseline characterization. Sampling of the dredged material also will be conducted as needed to determine disposal requirements. The Field Sampling Plan shall include and address the following:

(1) *Pre-Removal Field Sampling* will be used to further delineate dioxin contamination in the removal areas to identify the areal extent and depths of the dioxin contamination.

(2) *Post Removal Confirmation/Baseline Sampling* will be used to ensure the removal action achieved the removal of the dioxin-contaminated sediments identified in the

Removal Work Plan for removal at the Site and to establish baseline conditions in surface sediments after completion of the removal action. The Removal Work Plan will identify monitoring locations and methods.

(3) All testing will be consistent with the requirements of the disposal facility and federal guidelines for transportation and disposal of contaminated materials. Depending on the manner of disposal, along with testing for dioxin, the excavated bottom sediments may need to be tested using the Toxic Characteristic Leaching Procedure (“TCLP”) to determine if the excavated bottom deposits and sediments are characteristic of hazardous waste as provided at 40 C.F.R. Part 261, Subpart C. TCLP measurements will be performed as necessary to meet the requirements of the disposal facility;

c. Post-removal action Work sampling and chemical analysis shall take place within the area of the work as the removal action Work progresses. Samples shall be collected in accordance with the sampling and statistical analysis plans contained in the Removal Work Plan. A record of sample locations and results must be maintained and submitted to U.S. EPA. All sampling shall be completed in accordance with the deadlines established in the Field Sampling Plan;

d. Site control as deemed necessary by the OSC;

e. excavation and/or dredging of submerged sediments in the Saginaw River at the Site in order to remove dioxin-contaminated sediments. The areas to be excavated and/or dredged shall be described and depicted in the approved Removal Work Plan. Removal areas that approach the river banks will be constrained so as not to impact the physical integrity of the banks;

f. sediment management and disposal of all dioxin-contaminated material and uncontaminated material to appropriate landfills;

g. mobilization and staging requirements including road constructed to access the river, development of staging areas for equipment decontamination, dewatering, mobilization/demobilization, worker access, appropriate exclusion zones, and other project requirements, and removal of trees, wetland areas, and wetland trees along the shoreline and in areas approaching the river to provide adequate equipment access to the river.

(1) Dioxin contaminated sediments removed from the work areas at the Site must be properly characterized for disposal as authorized by this Settlement Agreement or as otherwise allowed under applicable law.

(2) Waste must be disposed of in compliance with the EPA Off Site Disposal Rule (Section 300.440 of the NCP and 58 Fed. Reg. 49200). Air monitoring for contaminants of concern and nuisance dust must be conducted during the removal action required under this Settlement Agreement in accordance with the approved Removal Work Plan;

h. Water management requirements to allow discharge of treated water to the Saginaw River;

i. Respondent shall regularly inform owners of property located within the Site of removal activities required under this Settlement Agreement which may affect their properties;

j. re-vegetation of excavated floodplain areas with native plants, as specified in the Removal Work Plan, this will include backfilling/grading, re-vegetation and erosion control;

k. verification sampling (generally described in Paragraph 16.b.) and chemical analysis, shall take place as the removal action progresses, to the extent practicable. Samples shall be collected in accordance with the sampling and statistical analysis plans contained in the Removal Work Plan. A record of sample locations and results must be maintained and submitted to U.S. EPA and the State for review upon request; and

l. Field work shall begin immediately. All excavation and/or dredging of submerged sediment removal action Work shall be completed by December 15, 2007.

17. Work Plan and Implementation.

a. Within 7 calendar days after the Effective Date, Respondent shall submit to U.S. EPA for approval a draft Removal Work Plan for performing the removal action generally described in Paragraph 16.a. through 16.l., above. The draft Removal Work Plan shall provide a description of, and an expeditious schedule for, the actions required by the Work described in Paragraph 16.a. through 16.l., above, and in this Settlement Agreement.

b. U.S. EPA may approve, disapprove, require revisions to, or modify the draft Removal Work Plan in whole or in part. To the extent practicable, and only to the extent consistent with the NCP, EPA shall first provide Respondent one request for modification and an opportunity to submit the requested modification(s) within 5 calendar days before EPA modifies the draft Removal Work Plan. If U.S. EPA requires revisions, Respondent shall submit a revised draft Removal Work Plan within 5 calendar days of receipt of U.S. EPA's notification of the required revisions. Respondent shall implement the Removal Work Plan as approved in writing by U.S. EPA in accordance with the schedule approved by U.S. EPA. Once approved, or approved with modifications, the Removal Work Plan, the schedule, and any subsequent modifications shall be incorporated into and become fully enforceable under this Settlement Agreement.

c. Except as previously authorized and/or directed by MDEQ, or as provided by this Settlement Agreement or as directed by U.S. EPA's letter to Respondent dated June 27, 2007, Respondent shall not commence any Work except in conformance with the terms of this Settlement Agreement, or commence implementation of the Removal Work Plan developed hereunder until receiving written U.S. EPA approval pursuant to Paragraph 17(b). U.S. EPA

acknowledges that Respondent has commenced mobilization, site preparation, sheet pile work, and related activities prior to the Effective Date of this Settlement Agreement.

18. Health and Safety Plan. Within 7 calendar days after the Effective Date, Respondent shall submit for U.S. EPA review and comment a plan that ensures the protection of the public health and safety during performance of on-Site work under this Settlement Agreement. This plan shall be prepared consistent with U.S. EPA's Standard Operating Safety Guide (PUB 9285.1-03, PB 92-963414, June 1992). In addition, the plan shall comply with all currently applicable Occupational Safety and Health Administration ("OSHA") regulations found at 29 C.F.R. Part 1910. If U.S. EPA determines that it is appropriate, the plan shall also include contingency planning. Respondent shall incorporate all changes to the plan recommended by U.S. EPA and shall implement the plan during the pendency of the removal action.

19. Quality Assurance and Sampling.

a. Within 7 calendar days of the Effective Date, Respondent shall submit to U.S. EPA for approval, a Quality Assurance Project Plan ("QAPP"). Respondent shall use quality assurance, quality control, and chain of custody procedures for all treatability, design, compliance and monitoring samples in accordance with "EPA Requirements for Quality Assurance Project Plans for Environmental Data Operation," (EPA QA/R5) (EPA/240/B-01/003, March 2001); "Guidance for Quality Assurance Project Plans (QA/G5)" (EPA/600/R-98/018, February 1998), and subsequent amendments to such guidelines upon notification by U.S. EPA to Respondent of such amendment. Amended guidelines shall apply only to procedures conducted after such notification. All sampling and analyses performed pursuant to this Settlement Agreement shall conform to U.S. EPA direction, approval, and guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Consistent with the foregoing, the methods and procedures contained in Respondent's existing QAPP covering the RCRA corrective actions associated with the Midland Plant shall be used as much as possible. Respondent shall ensure that the laboratory used to perform the analyses participates in a QA/QC program that complies with the appropriate U.S. EPA guidance. Respondent shall follow, as appropriate, "EPA Guidance for Quality Assurance Project Plans," EPA/QA/G-5, EPA/600/R-02/009 (December 2002), "EPA Requirements for Quality Assurance Project Plans," EPA/QA/R-5, EPA/240/B-01/003 (March 2001) and "Instructions on the Preparation of a Superfund Division Quality Assurance Project Plan," EPA Region 5, based on EPA QA/R-5, Revision 0 (June 2000), "Quality Assurance/Quality Control Guidance for Removal Activities: Sampling QA/QC Plan and Data Validation Procedures" (OSWER Directive No. 9360.4-01, April 1, 1990), as guidance for QA/QC and sampling. Respondent shall only use laboratories that have a documented Quality System that complies with ANSI/ASQC E-4 1994, "Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs" (American National Standard, January 5, 1995), and "EPA Requirements for Quality Management Plans (QA/R-2) (EPA/240/B-01/002, March 2001)," or equivalent documentation as determined by U.S. EPA. U.S. EPA may consider laboratories accredited under the National Environmental Laboratory Accreditation Program ("NELAP") as meeting the Quality System requirements.

b. Upon request by U.S. EPA or the State, Respondent shall have such a laboratory analyze samples submitted by U.S. EPA or the State for QA monitoring. Respondent shall provide to U.S. EPA and the State the QA/QC procedures followed by all sampling teams and laboratories performing data collection and/or analysis.

c. Upon request by U.S. EPA or the State, Respondent shall allow U.S. EPA, the State or their authorized representatives to take split and/or duplicate samples of any samples collected by Respondent or its contractors or agents while performing the Work. Respondent shall notify U.S. EPA and the State not less than 3 business days in advance of any sample collection activity, unless shorter notice is agreed to by U.S. EPA and the State. U.S. EPA and the State shall have the right to take any additional samples that U.S. EPA or the State deems necessary. Upon request, U.S. EPA and the State shall allow Respondent or its contractors to take split or duplicate samples of any samples taken as part of their oversight of Respondent's implementation of the Work.

20. Post-Removal Site Control. In accordance with the Removal Work Plan schedule, or as otherwise directed by U.S. EPA after consultation with the State, Respondent shall submit a proposal for post-removal site control consistent with Section 300.415(l) of the NCP and OSWER Directive No. 9360.2-02. Upon approval by U.S. EPA, after a reasonable opportunity for review and comment by the State, of the proposal for post-removal site control, Respondent shall implement such controls and shall provide U.S. EPA and the State with annual documentation of all post-removal site control arrangements.

21. Reporting.

a. Respondent shall submit a monthly written progress report to U.S. EPA and to the State concerning actions undertaken pursuant to this Settlement Agreement, beginning 30 days after the Effective Date until EPA's approval of the Final Report under Section XXVI, unless otherwise directed in writing by the OSC. These reports shall thereafter be due by the 15th day of each succeeding month and shall describe all significant developments during the preceding month, including the Work performed and any problems encountered, validated final analytical data received during the reporting period and developments anticipated during the next reporting period, including a schedule of Work to be performed, anticipated problems and planned resolutions of past or anticipated problems.

b. Respondent shall submit to U.S. EPA and to the State three copies of all plans, reports or other submissions required by this Settlement Agreement or the approved Removal Work Plan. Upon written request by U.S. EPA or the State, Respondent shall submit such documents in electronic form.

c. If the Respondent owns real property at the Site where Work related to this Settlement Agreement will be performed, such Respondent shall, at least 30 days prior to the conveyance of any interest in such property, give written notice to the transferee that the property is subject to this Settlement Agreement, and written notice to U.S. EPA and the State of the

proposed conveyance, including the name and address of the transferee. Respondent also agrees to require that its successors provide the same notice to U.S. EPA, the State, and to any subsequent transferee that is required of Respondent in the immediately preceding sentence. Respondent further agrees to require its successors to comply with Sections IX (Site Access) and X (Access to Information).

22. Final Report. Within 90 calendar days after receipt of all manifests, validated final analytical and QA/QC data and completion of all Work required by Section VIII of this Settlement Agreement, except for any continuing obligations required by this Settlement Agreement (e.g., monitoring, record retention and payment of Future Response Costs), Respondent shall submit for U.S. EPA review and approval, in consultation with the State, a final report summarizing the actions taken to comply with this Settlement Agreement. The final report shall conform, at a minimum, with the requirements set forth in Section 300.165 of the NCP, 40 C.F.R. § 300.165 entitled “OSC Reports” and with the guidance set forth in “Superfund Removal Procedures: Removal Response Reporting – POLREPS and OSC Reports” (OSWER Directive No. 9360.3-03, June 1, 1994). The final report shall include: 1) a good faith estimate of total costs or a statement of actual costs incurred in complying with this Settlement Agreement; 2) a listing of quantities and types of materials removed off-Site or handled on-Site; 3) a listing of the ultimate destination(s) of those materials; 4) a presentation of the final validated analytical results of all sampling and analyses performed; 5) and accompanying appendices containing all relevant documentation generated during the removal action (e.g., manifests, invoices, bills, contracts, and permits). The final report shall also include the following certification signed by a person who supervised or directed the preparation of the final report:

“Under penalty of law, I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of the report, the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.”

23. Off-Site Shipments.

a. Respondent shall, prior to any off-Site shipment of Waste Material from the Site to an out-of-state waste management facility, provide written notification of such shipment and of any contemplated additional shipments of Waste Material to the appropriate state environmental official in the receiving facility’s state and to the OSC. However, this notification requirement shall not apply to any off-Site shipments when the total volume of all such shipments will not exceed 10 cubic yards.

b. Respondent shall include in the written notification the following information: 1) the name and location of the facility to which the Waste Material is to be shipped; 2) the type and quantity of the Waste Material to be shipped; 3) the expected schedule for the shipment of the Waste Material; and 4) the method of transportation. Respondent shall notify the state in which the planned receiving facility is located of major changes in the shipment plan, such as a

decision to ship the Waste Material to another facility within the same state, or to a facility in another state.

c. Before shipping any hazardous substances, pollutants, or contaminants from the Site to an off-Site location, Respondent shall obtain U.S. EPA's certification that the proposed receiving facility is operating in compliance with the requirements of CERCLA Section 121(d)(3), 42 U.S.C. § 9621(d)(3), and 40 C.F.R. § 300.440. Respondent shall only send hazardous substances, pollutants, or contaminants from the Site to an off-Site facility that complies with the requirements of the statutory provision and regulation cited in the preceding sentence.

IX. SITE ACCESS

24. Respondent shall provide access to those areas of the Site that it owns or is in possession of, which access is necessary to implement this Settlement Agreement. Such access shall be provided to EPA employees, contractors, agents, consultants, designees, representatives, and State representatives. These individuals shall be permitted to move freely at those areas of the Site that Respondent owns or is in possession of in order to conduct actions which EPA determines to be necessary.

25. Where any action under this Settlement Agreement is to be performed in areas owned by or in possession of someone other than Respondent, Respondent shall use its best efforts to obtain all necessary access agreements within 10 business days after the Effective Date, or as otherwise specified in writing by the OSC. Respondent shall immediately notify U.S. EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Respondent shall describe in writing its efforts to obtain access. U.S. EPA may then assist Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as U.S. EPA deems appropriate. Respondent shall reimburse U.S. EPA for all costs and attorney's fees incurred by the United States in obtaining such access, in accordance with the procedures in Section XV (Payment of Response Costs).

26. Notwithstanding any provision of this Settlement Agreement, U.S. EPA and the State retain all of their access authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA, and any other applicable statutes or regulations.

X. ACCESS TO INFORMATION

27. Respondent shall provide to U.S. EPA and to the State, upon request, copies of all documents, records and information within its possession or control or that of its contractors or agents relating to activities at the Site or to the implementation of this Settlement Agreement, including, but not limited to, sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Respondent shall also make available to U.S. EPA and to the State for purposes of investigation, information gathering, or testimony, its employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.

28. Respondent may assert business confidentiality claims covering part or all of the documents or information submitted to U.S. EPA or to the State under this Settlement Agreement to the extent permitted by and in accordance with Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7), and 40 C.F.R. § 2.203(b). Documents or information determined to be confidential by U.S. EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no claim of confidentiality accompanies documents or information when they are submitted to U.S. EPA, or if U.S. EPA has notified Respondent that the documents or information are not confidential under the standards of Section 104(e)(7) of CERCLA or 40 C.F.R. Part 2, Subpart B, the public may be given access to such documents or information without further notice to Respondent.

29. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If the Respondent asserts such a privilege in lieu of providing documents, it shall provide U.S. EPA and the State with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the contents of the document, record, or information; and 6) the privilege asserted by Respondent. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

30. No claim of privilege or confidentiality shall be made with respect to any data, including, but not limited to, all sampling, analytical, monitoring, hydrogeologic, scientific, chemical, or engineering data, or any other documents or information evidencing conditions at or around the Site.

31. Notwithstanding any provision of this Settlement Agreement, U.S. EPA retains all of its information gathering authorities and rights, including enforcement authorities related thereto, under CERCLA, RCRA and any other applicable statutes or regulations.

XI. RECORD RETENTION

32. Until 6 years after Respondent's receipt of U.S. EPA's notification pursuant to Section XXVI (Notice of Completion of Work), Respondent shall preserve and retain all non-identical copies of records and documents (including records or documents in electronic form) now in its possession or control or which come into its possession or control that relate in any manner to the performance of the Work or the liability of any person under CERCLA with respect to the Site, regardless of any corporate retention policy to the contrary. Until 6 years after Respondent's receipt of U.S. EPA's notification pursuant to Section XXVI (Notice of Completion of Work), Respondent shall also instruct its contractors and agents to preserve all documents, records, and information of whatever kind, nature or description relating to performance of the Work.

33. At the conclusion of this document retention period, Respondent shall notify U.S. EPA at least 60 days prior to the destruction of any such records or documents, and, upon request by U.S. EPA, Respondent shall deliver any such records or documents to U.S. EPA. Respondent may assert that certain documents, records and other information are privileged under the attorney-client privilege or any other privilege recognized by federal law. If Respondent asserts such a privilege, it shall provide U.S. EPA with the following: 1) the title of the document, record, or information; 2) the date of the document, record, or information; 3) the name and title of the author of the document, record, or information; 4) the name and title of each addressee and recipient; 5) a description of the subject of the document, record, or information; and 6) the privilege asserted by Respondents. However, no documents, reports or other information created or generated pursuant to the requirements of this Settlement Agreement shall be withheld on the grounds that they are privileged.

34. Respondent hereby certifies individually that to the best of its knowledge and belief, after thorough inquiry, it has not altered, mutilated, discarded, destroyed or otherwise disposed of any records, documents or other information (other than identical copies) relating to its potential liability regarding the Site since notification of potential liability by U.S. EPA or the State or the filing of suit against it regarding the Site and that it has fully complied and will fully comply with any and all U.S. EPA requests for information pursuant to Sections 104(e) and 122(e) of CERCLA, 42 U.S.C. §§ 9604(e) and 9622(e), and Section 3007 of RCRA, 42 U.S.C. § 6927.

XII. COMPLIANCE WITH OTHER LAWS

35. Respondent shall perform all actions required pursuant to this Settlement Agreement in accordance with all applicable local, state, and federal laws and regulations except as provided in Section 121(e) of CERCLA, 42 U.S.C. § 6921(e), and 40 C.F.R. §§ 300.400(e) and 300.415(j). In accordance with 40 C.F.R. § 300.415(j), all on-Site actions required pursuant to this Settlement Agreement shall, to the extent practicable, as determined by U.S. EPA, considering the exigencies of the situation, attain applicable or relevant and appropriate requirements (“ARARs”) under federal environmental or state environmental or facility siting laws. Respondents shall identify ARARs in the Removal Work Plan subject to U.S. EPA approval.

XIII. EMERGENCY RESPONSE AND NOTIFICATION OF RELEASES

36. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Respondent shall immediately take all appropriate action. Respondent shall take these actions in accordance with all applicable provisions of this Settlement Agreement, including, but not limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Respondent shall also immediately notify the OSC or, in the event of his/her unavailability, the Regional Duty Officer, Emergency Response Branch, Region 5 at (312) 353-2318, of the incident or Site conditions. In the event that Respondent fails to take appropriate response action as required by this Paragraph, and U.S. EPA takes such action instead, Respondent shall reimburse U.S. EPA all costs of the response action not inconsistent with the NCP pursuant to Section XV (Payment of Response Costs).

37. In addition, in the event of any release of a hazardous substance from the Site, other than de minimis amounts incidental to normal dredging activities undertaken pursuant to this Settlement Agreement, Respondent shall immediately notify the OSC at (312) 353-2318 and the National Response Center at (800) 424-8802. Respondent shall submit a written report to U.S. EPA within 7 business days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XIV. AUTHORITY OF ON-SCENE COORDINATOR

38. The OSC shall be responsible for overseeing Respondent's implementation of this Settlement Agreement. The OSC shall have the authority vested in an OSC by the NCP, including the authority to halt, conduct, or direct any Work required by this Settlement Agreement, or to direct any other removal action undertaken at the Site. Absence of the OSC from the Site shall not be cause for stoppage of work unless specifically directed by the OSC.

XV. PAYMENT OF RESPONSE COSTS

39. Payments for Future Response Costs.

a. Respondent shall pay U.S. EPA all Future Response Costs not inconsistent with the NCP. On a periodic basis, U.S. EPA will send Respondent a bill requiring payment that consists of an Itemized Cost Summary. Respondent shall make all payments within 45 calendar days of receipt of each bill requiring payment, except as otherwise provided in Paragraph 41 of this Settlement Agreement according to the following procedures.

(i) If the payment amount demanded in the bill is for \$10,000 or greater, payment shall be made to U.S. EPA by Electronics Funds Transfer ("EFT") in accordance with

current EFT procedures to be provided to Respondent by U.S. EPA Region 5. Payment shall be accompanied by a statement identifying the name and address of the party(ies) making payment, the Site name, U.S. EPA Region 5, and the Site/Spill ID Number B5KF.

(ii) If the amount demanded in the bill is \$10,000 or less, the Settling Respondent may in lieu of the procedures in subparagraph 39(a)(i) make all payments required by this Paragraph by a certified or cashier's check or checks made payable to "EPA Hazardous Substance Superfund," referencing the name and address of the party making the payment, and the EPA Site/Spill ID Number B5KF. Settling Respondent shall send the check(s) to:

U.S. EPA
Superfund Payments
Cincinnati Finance Center
P.O. Box 979076
St. Louis, MO 63197-9000

b. At the time of payment, Respondent shall send notice that payment has been made to the Director, Superfund Division, U.S. EPA Region 5, 77 West Jackson Blvd., Chicago, Illinois, 60604-3590 and to Jeffrey A. Cahn, Associate Regional Counsel, 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590, and to Catherine J. Garypie, Associate Regional Counsel, 77 West Jackson Boulevard, C-14J, Chicago, Illinois, 60604-3590.

c. The total amount paid by Respondent pursuant to Paragraph 39(a) shall be deposited by U.S. EPA in the Tittabawassee River Dioxin Spill Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by U.S. EPA to the EPA Hazardous Substance Superfund.

40. In the event that the payments for Future Response Costs are not made within 45 days of Respondents' receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on Future Response Costs shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section, including but not limited to, payment of stipulated penalties pursuant to Section XVIII.

41. Respondent may dispute all or part of a bill for Future Response Costs submitted under this Settlement Agreement, only if Respondent alleges that U.S. EPA has made an accounting error, or if Respondent alleges that a cost item is inconsistent with the NCP or outside the scope of this Settlement Agreement. If any dispute over costs is resolved before payment is due, the amount due will be adjusted as necessary. If the dispute is not resolved before payment is due, Respondent shall pay the full amount of the uncontested costs to U.S. EPA as specified in

Paragraph 39 on or before the due date. Within the same time period, Respondent shall pay the full amount of the contested costs into an interest-bearing escrow account. Respondent shall

simultaneously transmit a copy of both checks to the persons listed in Paragraph 39(b) above. Respondent shall ensure that the prevailing party or parties in the dispute shall receive the amount upon which they prevailed from the escrow funds plus interest within 20 calendar days after the dispute is resolved.

XVI. DISPUTE RESOLUTION

42. Unless otherwise expressly provided for in this Settlement Agreement, the dispute resolution procedures of this Section shall be the exclusive mechanism for resolving disputes arising under this Settlement Agreement. The Parties shall attempt to resolve any disagreements concerning this Settlement Agreement expeditiously and informally.

43. If Respondent objects to any U.S. EPA action taken pursuant to this Settlement Agreement, including billings for Future Response Costs, it shall notify U.S. EPA in writing of its objection(s) within 10 calendar days of such action, unless the objection(s) has/have been resolved informally. This written notice shall include a statement of the issues in dispute, the relevant facts upon which the dispute is based, all factual data, analysis or opinion supporting Respondent's position, and all supporting documentation on which such party relies. U.S. EPA shall provide its Statement of Position, including supporting documentation, no later than 10 calendar days after receipt of the written notice of dispute. In the event that these 10-day time periods for exchange of written documents may cause a delay in the work, they shall be shortened upon, and in accordance with, notice by U.S. EPA. The time periods for exchange of written documents relating to disputes over billings for response costs may be extended at the sole discretion of U.S. EPA. An administrative record of any dispute under this Section shall be maintained by U.S. EPA. The record shall include the written notification of such dispute, the Statement of Position served pursuant to this paragraph, and all other materials exchanged during dispute resolution and designated as submitted as part of such dispute resolution. Based upon the administrative record, the Director of the Superfund Division, U.S. EPA Region 5, shall resolve the dispute consistent with the NCP and the terms of this Settlement Agreement. The Director of the Superfund Division, or his or her designee, shall, upon request, meet with the Parties before resolving the dispute.

44. Respondent's obligations under this Settlement Agreement shall not be tolled by submission of any objection for dispute resolution under this Section. Following resolution of the dispute, as provided by this Section, Respondent shall fulfill the requirement that was the subject of the dispute in accordance with the agreement reached or with U.S. EPA's decision, whichever occurs.

XVII. FORCE MAJEURE

45. Respondent agrees to perform all requirements of this Settlement Agreement within the time limits established under this Settlement Agreement, unless the performance is delayed

by a *force majeure*. For purposes of this Settlement Agreement, a *force majeure* is defined as any event arising from causes beyond the control of Respondent, or of any entity controlled by Respondent, including but not limited to its contractors and subcontractors, which delays or prevents performance of any obligation under this Settlement Agreement despite Respondent's best efforts to fulfill the obligation. *Force majeure* does not include financial inability to complete the Work or increased cost of performance.

46. If any event occurs or has occurred that may delay the performance of any obligation under this Settlement Agreement, whether or not caused by a *force majeure* event, Respondent shall notify U.S. EPA orally within 72 hours of when Respondent first knew that the event might cause a delay. Within 7 calendar days thereafter, Respondent shall provide the following to U.S. EPA in writing: 1) an explanation and description of the reasons for the delay; 2) the anticipated duration of the delay; 3) all actions taken or to be taken to prevent or minimize the delay; 4) a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; 5) Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and 6) a statement as to whether, in the opinion of Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. Failure to comply with the above requirements shall be grounds for U.S. EPA to deny Respondent an extension of time for performance. Respondent shall have the burden of demonstrating by a preponderance of the evidence that the event is a *force majeure*, that the delay is warranted under the circumstances, and that best efforts were exercised to avoid and mitigate the effects of the delay.

47. If U.S. EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, the time for performance of the obligations under this Settlement Agreement that are affected by the *force majeure* event will be extended by U.S. EPA for such time as is necessary to complete those obligations. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If U.S. EPA does not agree that the delay or anticipated delay has been or will be caused by a *force majeure* event, U.S. EPA will notify Respondent in writing of its decision. If U.S. EPA agrees that the delay is attributable to a *force majeure* event, U.S. EPA will notify Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event.

XVIII. STIPULATED PENALTIES

48. Respondent shall be liable to U.S. EPA for stipulated penalties in the amounts set forth in Paragraphs 49 and 50 for failure to comply with the requirements of this Settlement Agreement specified below, unless excused under Section XVII (*Force Majeure*) or as otherwise approved by U.S. EPA. "Compliance" by Respondent shall include completion of the activities under this Settlement Agreement or any work plan or other plan approved under this Settlement Agreement identified below in accordance with all applicable requirements of this Settlement Agreement within the specified time schedules established by and approved under this Settlement Agreement.

49. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in Paragraph 49(b):

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th day
\$1000	15th through 30th day
\$2,500	31st day and beyond

b. Compliance Milestones

1. Consistent with the Removal Work Plan, Respondent shall maintain site security at the area of contamination.
2. Respondent shall submit each of the plans required by this Settlement Agreement, including the Removal Work Plan in accordance with the schedules established in this Settlement Agreement.
3. Respondent shall complete each of the tasks required by the plans, including the Removal Work Plan in accordance with the schedules established in the plans, including the Removal Work Plan.
4. Respondent shall implement the Work as prescribed in this Settlement Agreement, and the plans, including the Removal Work Plan.
5. Respondent shall pay Future Response Costs as provided in this Settlement Agreement.

50. Stipulated Penalty Amounts - Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports pursuant to Paragraphs 21, 22, 37, and 73 :

<u>Penalty Per Violation Per Day</u>	<u>Period of Noncompliance</u>
\$500	1st through 14th day
\$1000	15th through 30th day
\$2,500	31st day and beyond

51. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties shall not

accrue: 1) with respect to a deficient submission under Section VIII (Work to be Performed), during the period, if any, beginning on the 31st day after U.S. EPA's receipt of such submission until the date that U.S. EPA notifies Respondents of any deficiency; and 2) with respect to a decision by the Director of the Superfund Division, Region 5, under Paragraph 43 of Section XVI (Dispute Resolution), during the period, if any, beginning on the 21st day after U.S. EPA submits its written statement of position until the date that the Director of the Superfund Division issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Settlement Agreement. U.S. EPA shall consider Respondent's good faith and best efforts in seeking to meet the terms and conditions of this Settlement Agreement and associated Work Plans and schedules.

52. Following U.S. EPA's determination that Respondent has failed to comply with a requirement of this Settlement Agreement, U.S. EPA may give Respondent written notification of the failure and describe the noncompliance. U.S. EPA may send Respondent a written demand for payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether U.S. EPA has notified Respondent of a violation.

53. All penalties accruing under this Section shall be due and payable to U.S. EPA within 30 days of Respondent's receipt from U.S. EPA of a demand for payment of the penalties, unless Respondent invokes the dispute resolution procedures under Section XVI (Dispute Resolution). All payments to U.S. EPA under this Section shall be paid by certified or cashier's check(s) made payable to "U.S. EPA Hazardous Substances Superfund," shall be mailed to U.S. Environmental Protection Agency, Program Accounting & Analysis Section, P.O. Box 70753, Chicago, Illinois 60673, shall indicate that the payment is for stipulated penalties, and shall reference the U.S. EPA Site/Spill ID Number B5KF, the U.S. EPA Docket Number, and the name and address of the party making payment. Copies of check(s) paid pursuant to this Section, and any accompanying transmittal letter(s), shall be sent to U.S. EPA as provided in Paragraph 39(b).

54. The payment of penalties shall not alter in any way Respondent's obligation to complete performance of the Work required under this Settlement Agreement.

55. Penalties shall continue to accrue during any dispute resolution period, but need not be paid until 20 days after the dispute is resolved by agreement or by receipt of U.S. EPA's decision.

56. If Respondent fails to pay stipulated penalties when due, U.S. EPA may institute proceedings to collect the penalties, as well as Interest. Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 52. Nothing in this Settlement Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of U.S. EPA to seek any other remedies or sanctions available by virtue of Respondent's violation of this Settlement Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Sections 106(b) and 122(l) of CERCLA, 42 U.S.C. §§ 9606(b) and 9622(l), and punitive damages pursuant to Section

107(c)(3) of CERCLA, 42 U.S.C. § 9607(c)(3). Provided, however, that U.S. EPA shall not seek civil penalties pursuant to Section 106(b) or 122(l) of CERCLA or punitive damages pursuant to Section 107(c)(3) of CERCLA for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of this Settlement Agreement. Should Respondent violate this Settlement Agreement or any portion hereof, U.S. EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. §9604, and/or may seek judicial enforcement of this Settlement Agreement pursuant to Section 106 of CERCLA, 42 U.S.C. §9606. Notwithstanding any other provision of this Section, U.S. EPA may, in its unreviewable discretion, waive in writing any portion of stipulated penalties that have accrued pursuant to this Settlement Agreement.

XIX. COVENANT NOT TO SUE BY U.S. EPA

57. In consideration of the actions that will be performed and the payments that will be made by Respondent under the terms of this Settlement Agreement, and except as otherwise specifically provided in this Settlement Agreement, U.S. EPA covenants not to sue or to take administrative action against Respondent pursuant to Sections 106 and 107(a) of CERCLA, 42 U.S.C. §§ 9606 and 9607(a), for the Work and Future Response Costs. This covenant not to sue shall take effect upon the Effective Date and is conditioned upon the complete and satisfactory performance by Respondent of all obligations under this Settlement Agreement, including, but not limited to, payment of Future Response Costs pursuant to Section XV. This covenant not to sue extends only to Respondent and does not extend to any other person.

XX. RESERVATIONS OF RIGHTS BY U.S. EPA

58. Except as specifically provided in this Settlement Agreement, nothing herein shall limit the power and authority of U.S. EPA or the United States to take, direct, or order all actions necessary to protect public health, welfare, or the environment or to prevent, abate, or minimize an actual or threatened release of hazardous substances, pollutants or contaminants, or hazardous or solid waste on, at, or from the Site. Further, nothing herein shall prevent U.S. EPA from seeking legal or equitable relief to enforce the terms of this Settlement Agreement. U.S. EPA also reserves the right to take any other legal or equitable action as it deems appropriate and necessary, or to require the Respondent in the future to perform additional activities pursuant to CERCLA or any other applicable law.

59. The covenant not to sue set forth in Section XIX (Covenant Not To Sue By U.S. EPA) above does not pertain to any matters other than those expressly identified therein. U.S. EPA reserves, and this Settlement Agreement is without prejudice to, all rights against Respondent with respect to all other matters, including, but not limited to:

- a. claims based on a failure by Respondent to meet a requirement of this Settlement Agreement;
- b. liability for costs not included within the definition of Future Response Costs;

- c. liability for performance of response action other than the Work;
- d. criminal liability;
- e. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessments;
- f. liability arising from the past, present, or future disposal, release or threat of release of Waste Materials outside of the Site; and
- g. liability for costs incurred or to be incurred by the Agency for Toxic Substances and Disease Registry related to the Site.

XXI. COVENANT NOT TO SUE BY RESPONDENT

60. Except to the extent that the United States may be a responsible party with respect to the Site under 107(a) of CERCLA, 42 U.S.C. § 9607(a), Respondent covenants not to sue and agrees not to assert any claims or causes of action against the United States, or its contractors or employees, with respect to the Work, Future Response Costs, or this Settlement Agreement, including, but not limited to:

- a. any direct or indirect claim for reimbursement from the Hazardous Substance Superfund established by 26 U.S.C. § 9507, based on Sections 106(b)(2), 107, 111, 112, or 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law;
- b. any claim arising out of response actions at or in connection with the Site, including any claim under the United States Constitution, the Michigan Constitution, the Tucker Act, 28 U.S.C. § 1491, the Equal Access to Justice Act, 28 U.S.C. § 2412, as amended, or at common law; or
- c. any claim against the United States pursuant to Section 113 of CERCLA, 42 U.S.C. § 9613, relating to the Site, provided, however, that this Paragraph 60(c) does not include claims under sections 113(f)(1) or 113(f)(3)(B) of CERCLA, 42 U.S.C. §§ 9613(f)(1) and 9613(f)(3)(B), against the United States in connection with the Work or Future Response Costs.

61. These covenants not to sue shall not apply in the event the United States brings a cause of action or issues an order pursuant to the reservations set forth in Paragraphs 59(b), (c), and (e) - (g), but only to the extent that Respondent's claims arise from the same response action, response costs, or damages that the United States is seeking pursuant to the applicable reservation. Further, nothing in this Settlement Agreement shall prevent Respondent from seeking legal or equitable relief to enforce the terms of this Settlement Agreement.

62. Nothing in this Agreement shall be deemed to constitute approval or preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XXII. OTHER CLAIMS

63. By issuance of this Settlement Agreement, the United States and U.S. EPA assume no liability for injuries or damages to persons or property resulting from any acts or omissions of Respondent. The United States or U.S. EPA shall not be deemed a party to any contract entered into by Respondent or its directors, officers, employees, agents, successors, representatives, assigns, contractors, or consultants in carrying out actions pursuant to this Settlement Agreement.

64. Except as expressly provided in Section XIX (Covenant Not to Sue by U.S. EPA), nothing in this Settlement Agreement constitutes a satisfaction of or release from any claim or cause of action against Respondent or any person not a party to this Settlement Agreement, for any liability such person may have under CERCLA, other statutes, or common law, including but not limited to any claims of the United States for costs, damages and interest under Sections 106 and 107 of CERCLA, 42 U.S.C. §§ 9606 and 9607.

65. No action or decision by U.S. EPA pursuant to this Settlement Agreement shall give rise to any right to judicial review, except as set forth in Section 113(h) of CERCLA, 42 U.S.C. § 9613(h).

XXIII. CONTRIBUTION

66. a. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2), and that Respondent is entitled, as of the Effective Date, to protection from contribution actions or claims as provided by Sections 113(f)(2) and 122(h)(4) of CERCLA, 42 U.S.C. §§ 9613(f)(2) and 9622(h)(4), for “matters addressed” in this Settlement Agreement. The “matters addressed” in this Settlement Agreement are the Work and Future Response Costs.

b. The Parties agree that this Settlement Agreement constitutes an administrative settlement for purposes of Section 113(f)(3)(B) of CERCLA, 42 U.S.C. § 9613(f)(3)(B), pursuant to which the Respondent has, as of the Effective Date, resolved its liability to the United States for the Work and Future Response Costs.

c. Nothing in this Settlement Agreement precludes the United States or Respondent from asserting any claims, causes of action, or demands for indemnification, contribution, or cost recovery against any persons not Parties to this Settlement Agreement. Nothing herein diminishes the right of the United States, pursuant to Section 113(f)(2) and (3), 42 U.S.C. § 9613(f)(2) and (3), to pursue any such persons to obtain additional response costs or response action, and to enter into settlements that give rise to contribution protection pursuant to Section 113(f)(2) of CERCLA, 42 U.S.C. § 9613(f)(2).

XXIV. INDEMNIFICATION

67. Respondent shall indemnify, save and hold harmless the United States, its officials, agents, contractors, subcontractors, employees and representatives from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, or subcontractors, in carrying out actions pursuant to this Settlement Agreement. In addition, Respondent agrees to pay the United States all costs incurred by the United States, including but not limited to attorneys fees and other expenses of litigation and settlement, arising from or on account of claims made against the United States based on negligent or other wrongful acts or omissions of Respondent, its officers, directors, employees, agents, contractors, subcontractors and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Settlement Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Respondent in carrying out activities pursuant to this Settlement Agreement. Neither Respondent nor any such contractor shall be considered an agent of the United States. The Federal Tort Claims Act (28 U.S.C. §§ 2671, 2680) provides coverage for injury or loss of property, or injury or death caused by the negligent or wrongful act or omission of an employee of U.S. EPA while acting within the scope of his or her employment, under circumstances where U.S. EPA, if a private person, would be liable to the claimant in accordance with the law of the place where the act or omission occurred.

68. The United States shall give Respondent notice of any claim for which the United States plans to seek indemnification pursuant to this Section and shall consult with Respondent prior to settling such claim.

69. Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between any one or more of Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

XXV. MODIFICATIONS

70. The OSC may make modifications to any plan or schedule in writing or by oral direction. To the extent practicable, and only to the extent consistent with the NCP, EPA shall first provide Respondent one request for modification and an opportunity to submit the requested modification(s) within 5 calendar days before EPA modifies such plan or schedule. Any oral modification will be memorialized in writing by U.S. EPA promptly, but shall have as its effective date the date of the OSC's oral direction. Any other requirements of this Settlement Agreement may be modified in writing by mutual agreement of the parties.

71. If Respondent seeks permission to deviate from any approved work plan or schedule, Respondent's Project Coordinator shall submit a written request to U.S. EPA for approval outlining the proposed modification and its basis. Respondent may not proceed with the requested deviation until receiving oral or written approval from the OSC pursuant to Paragraph 70.

72. No informal advice, guidance, suggestion, or comment by the OSC or other U.S. EPA representatives regarding reports, plans, specifications, schedules, or any other writing submitted by Respondent shall relieve Respondent of its obligation to obtain any formal approval required by this Settlement Agreement, or to comply with all requirements of this Settlement Agreement, unless it is formally modified.

XXVI. NOTICE OF COMPLETION OF WORK

73. When U.S. EPA determines, after U.S. EPA's review of the Final Report, that all Work has been fully performed in accordance with this Settlement Agreement, with the exception of any continuing obligations required by this Settlement Agreement, including, *e.g.*, post-removal site controls, payment of Future Response Costs, and record retention, U.S. EPA will provide written notice of completion to Respondent, at which time this Settlement Agreement shall be deemed satisfied. Such notice shall not be unreasonably withheld. If U.S. EPA determines that any such Work has not been completed in accordance with this Settlement Agreement, U.S. EPA will notify Respondent, provide a list of the deficiencies, and require that Respondent modify the Removal Work Plan if appropriate in order to correct such deficiencies. Respondent shall implement the modified and approved Removal Work Plan and shall submit a modified Final Report in accordance with the U.S. EPA notice. Failure by Respondent to implement the approved modified Removal Work Plan shall be a violation of this Settlement Agreement.

XXVII. FINANCIAL ASSURANCE

74. Within 30 days of the Effective Date, Respondent shall establish and maintain financial security in the amount of \$1,000,000 in one or more of the following forms:

- a. A surety bond guaranteeing performance of the Work;
- b. One or more irrevocable letters of credit equaling the total estimated cost of the Work;
- c. A trust fund;
- d. A guarantee to perform the Work by one or more parent corporations or subsidiaries, or by one or more unrelated corporations that have a substantial business relationship with at least one of Respondents; or
- e. A demonstration that Respondent satisfies the requirements of 40 C.F.R. Part 264.143(f). For these purposes, references in 40 C.F.R. § 264.143(f) to the "sum of current

closure and post-closure costs estimates and the current plugging and abandonment costs estimates” shall mean the amount of financial security specified above. If Respondent seeks to provide a demonstration under 40 C.F.R. § 264.143(f) and has provided a similar demonstration at other RCRA or CERCLA sites, the amount for which it is providing financial assurance at those other sites should generally be added to the estimated costs of the Work for this Paragraph.

75. If Respondent seeks to demonstrate the ability to complete the Work through a guarantee by a third party pursuant to Paragraph 74(a) of this Section, Respondent shall demonstrate that the guarantor satisfies the requirements of 40 C.F.R. Part 264.143(f). If Respondent seeks to demonstrate its ability to complete the Work by means of the financial test or the corporate guarantee pursuant to Paragraph 74(d) or (e) of this Section, Respondent shall resubmit sworn statements conveying the information required by 40 C.F.R. Part 264.143(f) annually, on the anniversary of the Effective Date. In the event that U.S. EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, Respondents shall, within 30 days of receipt of notice of U.S. EPA’s determination, obtain and present to U.S. EPA for approval one of the other forms of financial assurance listed in Paragraph 74 of this Section. Respondent’s inability to demonstrate financial ability to complete the Work shall not excuse performance of any activities required under this Settlement Agreement.

76. If, after the Effective Date, Respondent can show that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 74 of this Section, Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, reduce the amount of the financial security provided under this Section to the estimated cost of the remaining Work to be performed. Respondent shall submit a proposal for such reduction to U.S. EPA, in accordance with the requirements of this Section, and may reduce the amount of the security upon approval by U.S. EPA. In the event of a dispute, Respondent may reduce the amount of the security in accordance with the written decision resolving the dispute.

77. Respondent may change the form of financial assurance provided under this Section at any time, upon notice to and approval by U.S. EPA, provided that the new form of assurance meets the requirements of this Section. In the event of a dispute, Respondent may change the form of the financial assurance only in accordance with the written decision resolving the dispute.

XXVIII. INSURANCE

78. At least 7 days prior to commencing any on-Site work under this Settlement Agreement, Respondent shall secure, and shall maintain for the duration of this Settlement Agreement, comprehensive general liability insurance and automobile insurance with limits of one-million dollars (\$1,000,000), combined single limit. Within the same time period, Respondent shall provide U.S. EPA with certificates of such insurance. In addition, for the

duration of the Settlement Agreement, Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Respondent in furtherance of this Settlement Agreement. If Respondent demonstrates by evidence satisfactory to U.S. EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering some or all of the same risks but in an equal or lesser amount, then Respondent need provide only that portion of the insurance described above which is not maintained by such contractor or subcontractor.

XXIX. SEVERABILITY/INTEGRATION/ATTACHMENTS

79. If a court issues an order that invalidates any provision of this Settlement Agreement or finds that Respondent has sufficient cause not to comply with one or more provisions of this Settlement Agreement, Respondent shall remain bound to comply with all provisions of this Settlement Agreement not invalidated or determined to be subject to a sufficient cause defense by the court's order.

80. This Settlement Agreement and its attachments constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Settlement Agreement. The parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than those expressly contained in this Settlement Agreement. The following attachments are incorporated into this Settlement Agreement: Site Map(s); Action Memorandum.

XXX. EFFECTIVE DATE

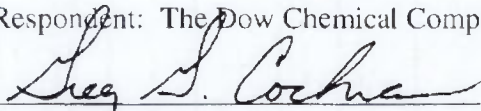
81. This Settlement Agreement shall be effective upon receipt by Respondent of a copy of this Settlement Agreement signed by the Regional Administrator, U.S. EPA Region 5.

The undersigned representative of Respondent certifies he/she is fully authorized to enter into the terms and conditions of this Settlement Agreement and to bind the Respondent to this document.

Agreed this 15 day of November, 2007.

For Respondent: The Dow Chemical Company

By



Greg G. Cochran

Director, Michigan Dioxin Initiative

IN THE MATTER OF:

The Dow Chemical Company
Midland, Michigan, 48667

It is so ORDERED and Agreed this 15 day of NOVEMBER, 2007.

By: Richard C Karl

Richard C. Karl, Director
Superfund Division
United States Environmental Protection Agency
Region 5

